

Babesiosis

Babesiosis is a Class B Disease and must be reported to the state within one business day.

Babesiosis is a parasitic tick-borne zoonotic disease caused by *Babesia* genus protozoa. The most common species is *Babesia microti*; other species include *B. duncani* and *B. divergens*. The primary mammalian reservoir identified for *B. microti* in endemic areas is a species of mouse, *Peromyscus leucopus*, the “white-footed mouse,” although other mammalian species may also serve as competent reservoirs. The disease is transmitted by *Ixodes scapularis* (also known as the deer tick or blacklegged tick), which has been found in most of the eastern and central United States. This is the same species of tick that spreads Lyme disease, though cases of babesiosis are less frequently identified. By most recent national data, the Centers for Disease Control and Prevention (CDC) reports there are about 1,700 cases in the U.S. each year, with 94% occurring in northeastern and upper midwestern states. This geographical distribution of cases is similar to the distribution of Lyme disease.

It is also possible to become infected with babesiosis through blood transfusions or congenital transmission – when an infection is passed from a mother to a baby during pregnancy. There is currently no Food and Drug Administration approved test available to screen blood donors for *Babesia* before collecting their blood; therefore, there is a risk of infected blood being used during blood transfusions. Although the CDC states that babesiosis is “the most frequently reported transfusion-transmitted parasitic infection in the U.S.,” it is still relatively uncommon.

The clinical manifestations of infection are either asymptomatic, ill with mild symptoms, or severe complications. Mild to moderate flu-like symptoms (such as fever, chills, sweats, headache, myalgia, arthralgia, malaise, fatigue, and weakness), can develop and last for several weeks. Non-flu symptoms can include hemolytic anemia or jaundice. Severe disease typically occurs in the immunosuppressed or elderly, but can have serious outcomes such as acute respiratory failure, congestive heart failure, liver and renal failure, splenic infarction, and disseminated intravascular coagulation.

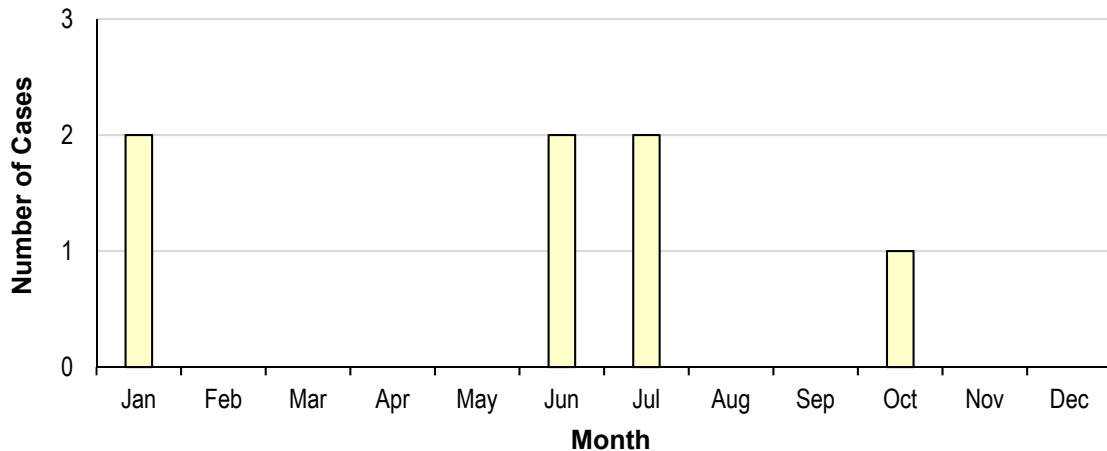
There have only been seven reported cases of babesiosis in Louisiana since 2013. Five of these cases had recent travel to a midwestern or northeastern state prior to diagnosis, and one is suspected to have become infected during a blood transfusion. Cases have ranged in age from 28 years to 73 years, and 57% of reported cases in Louisiana have been males (Table). Most have been residents of different parishes.

Table. Babesiosis Cases – Louisiana, 2013-2018				
Reported	Male	Female	Total	Exposure
2013	2	0	2	Travel history
2014	0	0	0	
2015	1	0	1	Travel history
2016	1	1	2	Blood transfusion and travel history
2017	0	1	1*	Travel history
2018	0	1	1	Unknown

* Case was not identified until 2017 but occurred in 2016

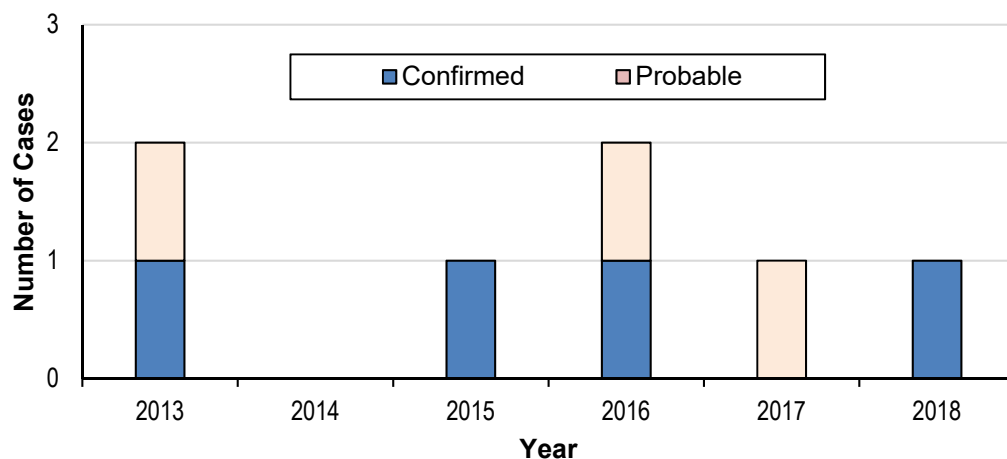
The *Babesia* parasite is most commonly spread by *I. scapularis* during the tick's nymphal stage, which is typically during warmer months. The CDC stated that about 82% of babesiosis cases in the U.S. in 2011 occurred between June and August. This seasonality is not as apparent in Louisiana due to the small amount of data (Figure 1).

Figure 1. Number of Cases of Babesiosis by Month - Louisiana, 2013-2018



Due to the difficulty in properly identifying a case of babesiosis, there are three ways that cases can be classified: confirmed, probable, or suspect. A confirmed case must have clinical symptoms and identification of *Babesia* organisms or DNA in blood samples. A probable case must have some form of lab evidence and either clinical symptoms or an epidemiological link to another case. A suspected case has lab evidence, but no symptoms or epidemiological information. In Louisiana, there have been four confirmed cases and three probable cases since 2013 (Figure 2).

Figure 2. Confirmed and Probable Cases of Babesiosis in Louisiana, 2013-2018



The 2016 Case

A case of babesiosis was identified in a patient in 2016. Approximately two months after receiving a blood transfusion, the patient presented to a primary care provider with fatigue, weight loss, and anemia. After tracking the sources of the 105 red blood cell and platelet products which the patient received, 67 individuals were implicated as potential source donors (this is excluding donations which were previously frozen and preserved, since this process kills the parasite). These donors were contacted and asked to provide a blood sample for testing in order to find the source and prevent any further transmission. About half of the donors agreed to testing and two had positive tests. These two donors were contacted and interviewed about their travel and illness history.

Donor 1 had no history of symptoms and no relevant travel during the months immediately preceding donation. However, the individual did have frequent travel to northeastern states at other points in time. Also, the only evidence of infection was a positive antibody test, which could be indicative of a past infection and not necessarily an infection at the time of donation.

Donor 2 also had no history of symptoms or relevant travel immediately preceding donation, but did test positive using a test which detects *Babesia* DNA, meaning the donor was parasitemic at the time of the test. This signifies that Donor 2 was more likely the source of the infectious blood donation. All remaining blood donations from this individual were identified and destroyed. Both donors are now excluded for life from donating blood.

The fact that the implicated donor had no relevant travel out of state prior to the implicated donation increases the suspicion that *Babesia* is present and may be sporadically transmitted in Louisiana. There is no current evidence to suggest that transmission occurs frequently. The tick that transmits the disease is present in nature and Lyme disease has been occasionally locally-acquired as well. This has led to an increase in efforts to isolate the parasite in ticks and identify additional cases in Louisiana in order to confirm its presence.

Over 100 *Babesia* species are reported to occur in wildlife, domestic animals, and pets. Humans can become infected with animal species other than those usually associated with human illness. Often the reservoirs as well as the vectors that transmit several of these zoonotic *Babesia* species are unknown.